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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/024,581	12/21/2001	Hiroaki Takeuchi	046103-5008	2484
9629 7590 01/27/2004 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER LAM, CATHY FONG FONG	
			ART UNIT 1775	PAPER NUMBER

DATE MAILED: 01/27/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/024,581

Applicant(s)

TAKEUCHI ET AL.

Examiner

Cathy Lam

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s): \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

In view of the amendment filed on December 15, 2003, the pending claims are continued to be unpatentable as following:

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard (US 5589714) or Hsiao et al (US 5292688) further in view of Thomas (US 5828126) or Lin et al (US 5468999) or Nishiyama (US 6324067).

Howard discloses a semiconductor device which is encapsulated (or embedded) in a thermosetting resin (col 2 L 19-22).

The thermosetting resin comprised of aluminum nitride particles and additives such as pigments or dyes (col 2 L 22-26 & col 5 L 49-51). The pigments or dyes is specifically carbon black material (col 7 L 13). The resin material has a dielectric constant of less than 10 (col 4 L 39).

The thermosetting resin is an epoxy resin which can be bisphenol epoxy resin, phenol epoxy novolac, or cresol epoxy novolac resins (col 5 L 18-22).

Hsiao teaches an encapsulant (7) which is used for bonding a semiconductor chip (1) to a substrate (2).

The semiconductor chip is encapsulated (or embedded) by the encapsulating composition (7) (see Fig.). The encapsulating composition (7) is comprised of an epoxy resin and an inorganic filler (col 5 L 1-5, 7-8 & col 4 L 63-65).

The encapsulant has a dielectric constant of less than 5.0 (col 6 L 23-24). The composition further comprises of an organic dye in an amount of less than about 0.2%. such dye can be a blue tone or a carbon black (col 5 L 58-62).

Both Howard and Hsiao disclose the same material used as the claimed invention, it is inherent that Hsiao's encapsulant possess the same  $\tan\delta$  value, because  $\tan\delta$  is a property and property is materially dependent.

Both Howard and Hsiao disclose an encapsulating material in which an electronic component is embedded. Howard and Hsiao do not however teach a structure having a cavity or opening in which the electronic component resides and that the encapsulating material is used to fill the cavity or opening.

Thomas, Lin and Nishiyama disclose a multilayer structure comprised of a base substrate and a build up layer. The build up layers are made of wiring layers and insulating layers in an alternate manner (see Thomas 14a, 14b, 16a, 16b, 24, 26, 28; and Lin 18, 14, 16, and Nishiyama Figs. 10, 10a, 10b, and 13-15).

A cavity is formed in the build up layers, wherein an electronic component is formed within. An epoxy resin encapsulant is used to fill the cavity (Thomas col 6 L 24-26, Lin col 5 L 25-27, Nishiyama col 6 L 57-63 & L 15-18).

In view of the prior art teachings, one skill in the art would use Howard or Hsiao's encapsulating material over a component formed within a cavity because such structure is well known in the art.

Applicant in the claims have included the limitation of having a substrate which is a build up layer, and that the substrate is on the embedding resin. The examiner takes the position that Thomas, Lin and Nishiyama all meet this limitation, because these prior art discloses a build up layer that is adjacent to the embedding resin. The fact that "on the embedding resin" does not necessary mean it is "above" the resin, but it could be "below". The build up layer which is on the embedding resin can be put "on" from the bottom.

### ***Double Patenting***

1. Claims 1-6 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 of U.S. Patent No. 6,586,827. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are materially and structurally the same.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

### ***Response to Arguments***

2. Applicant's arguments filed on December 15<sup>th</sup> 2003 have been fully considered but they are not persuasive. Applicant contends that the combination of the prior art references do not make the present invention obvious.

The examiner disagrees with the applicant reasons in the remarks and continues to rely on the same prior art references for the pending claims. Furthermore, the examiner is maintaining the obviousness-type double patenting rejection over application serial no. 10/026928, now USPN 6,586,827; although USPN 6,586,827 does not claim the dielectric constant and the  $\tan\delta$ , but since both use the same kind of thermosetting resin(s) and inorganic filler, it would be inherent to have the same dielectric constant and  $\tan\delta$ .

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cathy Lam whose telephone number is (571) 272-1538. The examiner can normally be reached on 9am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (571) 272-1535. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
Cathy Lam  
Primary Examiner  
Art Unit 1775

cfl  
January 20, 2004